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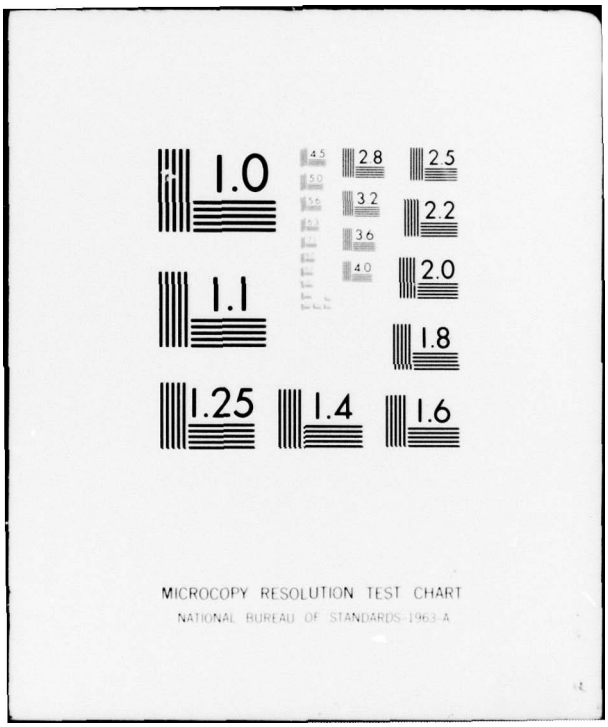
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(6) OVERVIEW OF DISCUSSION IN STOCKHOLM
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(10) T. Finley Burke

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PREFACE

This paper summarizes the author's discussions on

In October 1976, Major General Carl-Gustaf Ståhl of the Royal Swedish Army invited me to Stockholm as his guest to discuss Swedish defense problems. During separate sessions I met for informal discussions with small groups from the Swedish Army, the Navy, the Air Force, and the Defense Research Institute. Some of these meetings were also attended by Mr. John E. Morse (retired Deputy Assistant Secretary of Defense for European and NATO Affairs), and he and I presented brief talks to a gathering of some 50 people. I understand that representatives of the Parliament were present during some of these meetings.

The schedule was such that several topics were touched upon by one or more groups but not with others. Some topics that deserve discussion were not treated at all. Although my hosts seemed appreciative, the coverage was fragmented.

Upon my return I wrote to General Ståhl and enclosed a paper which sought to present an overview of the topics under discussion. In my letter I emphasized that, although the enclosure seemed lengthy, it barely mentioned numerous subjects that deserved extensive treatment.

OVERVIEW OF DISCUSSIONS IN STOCKHOLM
27-29 OCTOBER 1976

Current discussion of the consequences expected to stem from the introduction of "smart" weapons into nonnuclear warfare tend usually to be circumscribed by several tacit assumptions:

(1) that the available (and future) technology will be applied to the design of weapons that are expected to increase the effectiveness of the major combat arms of existing forces.

(2) that the major features of present organization, deployment, and operation of forces will not be changed radically; moreover, that traditional appreciations of threats and opportunities, of suitable choices of objectives, and of command doctrine and function will remain valid

(3) that the new "high technology" devices are inherently complex and costly; that their employment requires special training and skill; that they will be available in limited numbers, and thus will be designed and used only for certain particular missions.

These assumptions are rarely stated explicitly and their truth even less often questioned; for the present they appear to be self-fulfilling prophecies. It is argued herein that they are not only unnecessary, but also dangerous inasmuch as they risk technological surprise by an enemy who perceives broader opportunities.

Already-available technology is so rich and varied that it is only a mild exaggeration to say that it is feasible to devise almost any weapon system one can imagine. In the face of such an immense range

of opportunity, and of threat, the difficult problem is to understand which of the possible weapons one should acquire and why.

This problem of choice from a nearly-limitless spectrum of possibility, and the present effects of the tacit assumptions noted above, can be illuminated by an illustrative example. It is an important feature of the new "smart" systems (but certainly not the only feature) that some sort of terminal guidance is used to steer the device to the target. To the extent that this is done, the effectiveness of the system is made much less dependent upon the launch conditions; rather crude and imprecise launch can be accommodated by corrections imposed near the end of the trajectory. Consider then, the widely-reported development in the United States of a laser-designated artillery shell--surely a triumph of technological ingenuity and of institutional thinking. By virtue of terminal guidance the need for precise pointing of an artillery tube will be removed; the round could as well be launched from a Jeep. Nevertheless, the available technology is here seen only as a means to improve existing artillery rather than as a means to do away with artillery.

The major combat arms are so institutionally entrenched that such limited perceptions of opportunity are inevitable. The artillery is not likely to state an operational requirement for a system to supersede artillery, nor will air forces require a system to replace combat aircraft, nor will armor seek to eliminate tanks. Therein lies the core of the problem of figuring out what should be acquired and why. Present institutions are not prone to seize an opportunity to become obsolete; the "carrot" of opportunity is not that attractive. However the "stick"--the threat from more imaginative hostile perceptions--is just as real as the "carrot" of opportunity, and perhaps more compelling.

As a class, the new "smart" weapons, whether launched from land, sea, or air, and irrespective of their range, share one important attribute: they are fairly likely to hit the target. This in itself, without regard to the further details, should be understood to be a drastic change inasmuch as the Western World has, for several centuries, used weapons which are not at all likely to hit. These new weapons

will put a great premium on finding targets, and an equally great premium on not being found. The trend is certainly toward a world wherein, if you can be found, you can be hit--virtually without restrictions on range. It is going to become necessary not to present military targets to an enemy.

Against that background it is essential to note that there is one important class of targets which can certainly be found and certainly be hit, even deep in the rear. These are the many warehouses, barracks, fuel dumps, ammunition dumps, repair depots, bridges, docks, motor pools, and other installations which together comprise the rear support structure on which a modern force feeds. With current technology an enemy could use standoff precision weapons to strike the whole rear structure. He could destroy the means whereby fuel is delivered to the aircraft, tanks, trucks, and APCs; whereby rounds are delivered to the artillery and the aircraft; and even whereby food is delivered to the men. The enemy could win without appreciable engagement on the battlefield.

This is undoubtedly the most important threat that will arise from the introduction of "smart" weapons. All of the major arms now in use will become obsolete because they can be starved. It will be necessary to find ways to fight with a small number of men in the field and with scant consumption of materiel in the field.*

When the wide spectrum of opportunity available from current technology is viewed from the foregoing perception of threat, one finds it possible to devise very different weapon systems from those which emerge as mere improvements of present arms. A useful approach is to realize that it is no longer necessary or advantageous that he who finds a target, or steers a weapon onto a target, also be the one who carries and launches. The launch can as well take place from a point quite far

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*Much more remains to be said than can be treated in this brief summary. Such topics include active defense and countermeasures against the new weapons, the effects of dispersal, the high rate of consumption seen in the Yom Kippur war, and a great many political questions arising from drastic revision of current views and institutions.

away (limited most severely by whatever need there may be for promptness of delivery). In particular, a man in the field can and should function primarily as an executive; he should observe the scene, find and identify targets, call for fire, and, probably, participate in terminal guidance. He should carry electronics and he must be concealed. A small party of men, suitably equipped, can command the firepower heretofore associated with a division. Not only will the rest of the division no longer be needed, but they will have to be removed because they cannot be supported and they hinder freedom of fire.

A surprisingly small number of men, dispersed in small concealed groups, could defeat a major now-modern army (and air force). They would remain in place, hidden but active, even after enemy forces pass by. They would regard their home territory as a killing ground, and they would continue to kill the enemy in his rear as well as at the leading edge. They would necessarily conduct themselves as guerrillas, albeit in control of very modern weapons delivered at call. They could not ride in vehicles (for reasons of concealment as well as fuel supply), and so could not (but need not) move quickly or over great distances. Very probably such a force would be incapable of offensive operations into hostile territory; the military dictum that the best defense is a strong offense will probably cease to be true (if it ever was).

The kind of force concept sketched above* is crucially dependent upon devising a suitable survivable launch platform from which standoff weapons can be delivered, on call, to the dispersed force in the field. This is probably the most difficult technical feature of the novel force concept, and it appears that suitable solutions will differ

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*A very great number of topics need more discussion than can be treated here. Among them are: the provision of communications to and from such a force, and how to cope with hostile jamming and emitter location; resupply of consumables to the force in the field; force readiness and prepositioning; the self-defense capability of such small groups; possible enemy occupation of cities and the taking of civilian hostages; the possible appearance of similar intruding hostile "guerrillas"; above all, the political aspects of such a defense concept, including the idea of allowing an enemy to penetrate home territory so as to be able to kill him.

considerably for different nations because of political and geographic constraints. A superpower, such as the United States or the U.S.S.R., might consider the use of a large fleet of long-endurance cargo aircraft to carry the standoff missiles to the edge of the combat theater, operating from air bases under the nuclear umbrella of a major strategic capability. Sweden, on the other hand, can hardly design its force on the assumption that the homeland itself is a sanctuary; the missiles must be based survivably in Sweden (for reasons of readiness as well as geographic and political constraints). However, it should be much easier to protect such missile launch points against nonnuclear attack than it would be to protect the support elements for today's forces, and the problem may not be wholly intractable. For example, hardened basing in caves deserves study. So too does the possible use of concealment in disguised structures (these may be vulnerable to intelligence compromise). It probably would not do to depend upon a small number of launch points because these might be overrun by an enemy force. Sweden probably will find it necessary to use a fairly large number of launch points dispersed throughout the whole country. With a sufficient number, a severe admission price could be imposed on an enemy before he could capture all of them.

It is quite possible that Sweden would need a larger number of dispersed hardened launch points than it would need parties of men in the field. A plausible preliminary analysis suggests that a combat force in the field not larger than 20,000 men, dispersed in 5000 four-man teams (perhaps fewer), could mount a very impressive defense. That number of teams, roughly 10 km apart on average, hiding in the terrain, could lay heavy fire on an intruding enemy force, even under conditions of severely limited visibility. Such fire would be highly effective even if the single-shot kill probability was quite low.

It should be mentioned that, if the Army forces could call for standoff fire delivered from hardened survivable launch points, so too could the Navy. As remarked above, the use of standoff missiles frees the forward observer from the need to carry and launch the missile. Ship design could change drastically and, it seems, could be much less costly. The ship at sea might become the counterpart of the small

concealed combat team on land. Most of the hull might be below the surface for concealment (but, to save cost, not be a submarine), with a fiberglass (for low radar cross-section) conning tower from which to find targets, call for fire, and aid terminal guidance. Rather low speed (to save cost and to reduce noise and wake) should suffice, just as it would on the land, and the crew might be very few men. Sweden could afford quite a large number of such ships based throughout the archipelago.

With this mention of possible numbers it is pertinent to return to the third tacit assumption mentioned at the outset, and to discuss numbers and costs. Contrary to that tacit assumption, technically informed men usually concur that these "smart" weapons are not excessively intricate and not inherently expensive (even though U.S. procurement practices seem to indicate otherwise). Once the initial development and design for production is finished, a long-range terminally-guided missile with an electronic/optical nose is no more difficult or expensive to build than a Cadillac automobile. Cadillacs cost less than $3 per pound, list price at retail. (So do Saabs and Volvos in Sweden.) If missiles were built the way automobiles are built (there is no reason why they should not be), they too could be bought for a few dollars a pound. In quantity, a 5000-pound standoff missile (capable of about 1000 pounds of payload) should not cost more than roughly $25,000 delivered at the factory. If Sweden were to procure 5000 such missiles per year, the procurement cost would be roughly 1/16 of the present budget. In as little as ten years the inventory of 50,000 missiles would suffice to exact a substantial admission price from any intruder.

It would be equally practicable for a major power such as the United States or the U.S.S.R. to procure as many as 100,000 such missiles per year. The point of these remarks is not the numerical detail, which is certainly open to argument, but rather to suggest that the appropriate numerical scale is probably a magnitude or more greater than current discussions might suggest. As the novelty of these devices wears off they will become commonplace. They will not be severely limited in number or in mission; neither will they require excessive

skill or training.

It is pointless to predict how or when or in whose hands this future world of "smart" weapons will appear. It would be irresponsible to predicate one's future on the premise that it won't happen (or, more typically, that this future is so remote that one need not worry about it this year). It is also unnecessary, because the means already exist whereby to start building a new force, and that new force would be less vulnerable and more capable than today's force--even for use in today's world against today's dangers.

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What, then, would it seem advisable that Sweden do about all this? A few suggestions come to mind for the immediate future. These are necessarily set within the context of an ongoing consideration of whether Sweden should initiate development of a follow-on manned combat aircraft.

Ⓐ The decision concerning a new aircraft will (and should) be made without substantial regard for the relatively drastic forecast presented herein. Hasty and uncritical acceptance of these views is unlikely and undesirable. If, as is reported to be likely, a decision is made to initiate aircraft development, that decision will not foreclose parallel study of alternatives. It would not be unreasonable to suggest that a 1977 decision might be reconsidered in 1980-84 and, possibly, altered in the light of new analyses, new hardware developments in Sweden, or events in the world. It would be well to foster that view of the 1977 decision.

Ⓑ During the next few years at least three activities could be undertaken, in parallel, at modest expense, and without direct interference with an aircraft development program. The first of these is a detailed analysis of the

possible air defense of Sweden based upon a proliferated dispersed concealed SAM system. Preliminary paper study should lead to an operational concept and to performance requirements to be placed upon such a SAM. Assuming that these results look favorable, prototype development of the SAM could be initiated. Inasmuch as this program bears directly upon the question of further aircraft development, and does not depend upon the acceptance of the more drastic forecast presented in these notes, the SAM seems to deserve particular attention and priority. The SAM situation outside Sweden may change drastically in 5-10 years.

© The second immediate action that might be initiated is a careful study and evaluation of the major theses offered in these notes. They are, by normal standards, drastic and provocative; nevertheless, it would not be conservative to dismiss them out of hand. Such a study should consider at least three aspects: (1) their technical soundness and feasibility, (2) whether or not the novel approach might be a preferable course for Sweden, even if not compelled by the evident emergence of a new threat, and (3) whether the threat of technological surprise may compel adoption of the novel approach. Such a study should be expected to lead onward to the formulation of a detailed plan. However, it would be better, in the initial study, to set aside entirely the inhibiting question of how to "get there from here." These considerations usually show that it really can't be done within a man's lifetime. It is much more useful first to paint, at least in broad strokes, the goal toward which Sweden wishes to direct the evolution of its forces. On the other hand, it is equally self-defeating to dictate that the time frame under consideration is remote. That removes a sense of urgency and importance, and opens specu-

lations of unforeseeable breakthroughs. It is suggested that 2000 AD is too remote.

The questions involved in such a study necessarily touch upon very difficult political and social problems. Among these are: the viability and character of various industries, possible needs to retrain workers and to acquire new factory tools, possible overseas markets, impact on the economy and on employment, and public acceptance of drastically altered plans for national defense. It is important that such matters not give rise to undue political polarization. It would be prudent to seek multilateral participation by Sweden's major political parties early in these studies. Nonpartisan agreement, where possible, would be highly desirable.

(D) The third immediate action that might be taken is to insure that Sweden has the necessary technical capacity. This entails not only competence in modern high technology at the advanced professional level, but also in routine engineering, in the laboratory, and in the factory. Sweden needs a capability to invent, design, develop, test, and manufacture modern devices. It appears to an outsider that Sweden is not now keeping up. (It should be small consolation to Sweden that most other nations also are not.) Inasmuch as modern technology is certain to play a major role in future civilian life as well as military, Sweden can ill afford to fall seriously behind.

If, as seems possible, private enterprise cannot accept the costs and risks of entering the present competitive arena, then it might be advisable to consider government guarantees or subsidies, or perhaps to establish the needed technology within military facilities. Technology areas that appear to deserve particular attention include:

--- solid state LSI, minicomputers, charge-coupled devices, I/O devices (and perhaps acoustic surface-wave devices)
--- lasers and related optical devices (and perhaps low-loss optical fibers)
--- mathematical theory of error-correcting codes
--- compact low-cost precise clocks (derivatives of rubidium and cesium oscillators) for future use in a knapsack or a missile
--- high-burning-rate rocket motors (and of other missile components for use in a 400-g environment and at speeds in the 3000-8000 feet/sec regime)

If it should turn out that the drastic forecast offered here is, in appreciable degree, correct then the major revision of Swedish defenses needed to accommodate would require considerable time--no doubt more than a decade in view of the design, procurement, and training involved. Thus, although all this seems farfetched and remote, time may be of the essence. It is suggested that the steps mentioned above are a minimum prescription and that they should be pursued with some degree of urgency. It would be well to require that they bear considerable fruit before 1982.